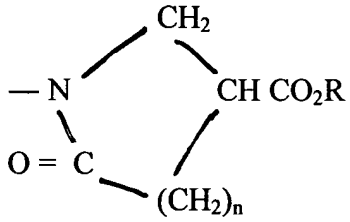
What is claimed is:

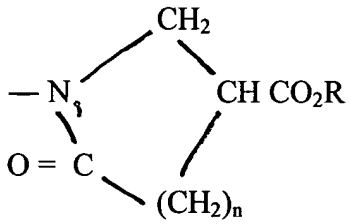
1. A dendritic polymer having a formula selected from the group consisting of:

$D_G(Q)_z$, $D_G(NH_2)_{z-x}(Q)_x$, and $D_G(Q)_{z-x}(Q')_x$

wherein D_G is a dendritic polymer, $_G$ is the generation number of the dendritic polymer, x has a value of from 1 to (z-1), z is an integer less than or equal to $N_c \cdot N_b^G$, wherein N_c is core multiplicity, N_b is branch cell multiplicity, Q has the general formula:



wherein n has a value of from zero to 3 Q', has the general formula:



wherein n has a value of from zero to 3, wherein the value of n in Q' is not the same as the value of n in Q, and wherein R is selected from the group consisting of hydrogen, alkyl groups having from 1 to 18 carbon atoms and aryl groups having from 6 to 12 carbon atoms.

2. A process for preparing a dendritic polymer, the process comprising:

(I) providing a precursor primary amine functional dendrimer having the general formula:

$$D_G(NH_2)_z;$$

(II) contacting the precursor primary amine functional dendrimer with a material having the general formula:

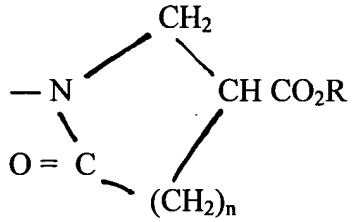
$$RO_2CC(CH_2)_nCO_2R$$

wherein R is selected from the group consisting of hydrogen, alkyl groups having from 1 to 18 carbon atoms and aryl groups having from 6 to 12 carbon atoms;

(III) reacting (I) and (II) for a time sufficient and at a temperature sufficient to provide a dendritic polymer having the general formula selected from the group consisting of

$$D_G(Q)_z,$$

wherein D_G is a dendritic polymer, $_G$ is the generation number of the dendritic polymer, z is an integer less than or equal to $N_c \cdot N_b^G$, wherein N_c is core multiplicity, N_b is branch cell multiplicity, and Q has the general formula:



wherein n has a value of from zero to 3 and wherein R is selected from the group consisting of hydrogen, alkyl groups having from 1 to 18 carbon atoms and aryl groups having from 6 to 12 carbon atoms.

3. A dendritic polymer prepared by the process of claim 2

4. A process for preparing a dendritic polymer, the process comprising:

(I) providing a precursor primary amine functional dendrimer having the general formula:

$$D_G(NH_2)_z;$$

(II) contacting the precursor primary amine functional dendrimer with a sub-stoichiometric quantity of a material having the general formula:

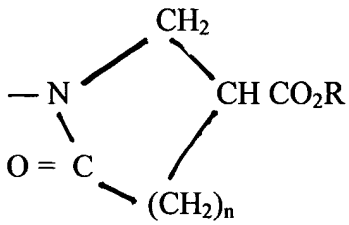
$$RO_2CC(CH_2)_nCO_2R$$

wherein R is selected from the group consisting of hydrogen, alkyl groups having from 1 to 18 carbon atoms and aryl groups having from 6 to 12 carbon atoms;

(III) reacting (I) and (II) for a time sufficient and at a temperature sufficient to provide a dendritic polymer having the general formula

$$D_G(NR"_2)_{z-x}(Q)_x,$$

wherein D_G is a dendritic polymer, $_G$ is the generation number of the dendritic polymer, x has a value of 1 to (z-1), z is an integer less than or equal to $N_c \cdot N_b^G$, wherein N_c is core multiplicity, N_b is branch cell multiplicity, and Q has the general formula:



wherein n has a value of from zero to 3 and wherein R is selected from the group consisting of hydrogen, alkyl groups having from 1 to 18 carbon atoms and aryl groups having from 6 to 12 carbon atoms and R" is selected from the group consisting of hydrophobic groups, hydrophilic groups, hydrogen, hydroxyl groups, and alkyl groups having 1 to 18 carbon atoms.

5. A dendritic polymer prepared by the process of claim 4.

6. A process for preparing a functionalized material, the process comprising:

(I) contacting a dendritic polymer as claimed in claim 5 with a polyfunctional amine;

(II) contacting the product from (I) with additional pyrrolidone, piperidone, or azetidinone-terminated dendritic polymers.

7. A dendritic polymer prepared by the process of claim 6.

8. A process for preparing a functionalized material, the process comprising:

(I) providing a precursor primary amine functional dendrimer having the general formula:

$$D_G(NH_2)_z;$$

(II) contacting the precursor primary amine functional dendrimer with a sub-stoichiometric quantity of a material having the general formula:

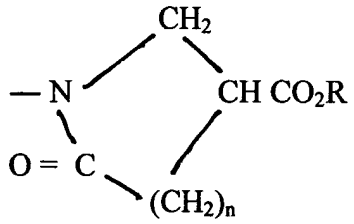
$$RO_2CC(CH_2)_nCO_2R$$

wherein R is selected from the group consisting of hydrogen, alkyl groups having from 1 to 18 carbon atoms and aryl groups having from 6 to 12 carbon atoms;

(III) reacting (I) and (II) for a time sufficient and at a temperature sufficient to provide a dendritic polymer having the general formula selected from the group consisting of

$$D_G(NR"_2)_{z-x}(Q)_x,$$

wherein D_G is a dendritic polymer, $_G$ is the generation number of the dendritic polymer, x has a value of 1 to (z-1), z is an integer less than or equal to $N_c \cdot N_b^G$, wherein N_c is core multiplicity, N_b is branch cell multiplicity, and Q has the general formula:



wherein n has a value of from zero to 3 and wherein R is selected from the group consisting of hydrogen, alkyl groups having from 1 to 18 carbon atoms and aryl groups having from 6 to 12 carbon atoms, and reacting the product from (iii) with material that will react with residual amine groups in the dendritic polymer to provide a functional group selected from the group consisting of (a) hydrophobic groups and (b) hydrophilic groups.

9. A process as claimed in claim 8 wherein (a) and (b) are selected from the group consisting of (i) acrylates, (ii) epoxides, and (iii) acids.

10. A dendritic polymer prepared by the process of claim 8.

11. A dendritic polymer prepared by the process of claim 9.

12. A process for preparing a functionalized material, the process comprising:

(I) providing a precursor primary amine functional dendrimer having the general formula:

$$D_G(NH_2)_z;$$

(II) contacting the precursor primary amine functional dendrimer with a mixture of materials having the general formula:

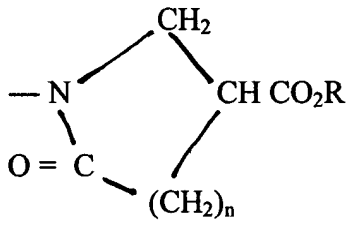
$$RO_2CC(CH_2)_nCO_2R$$

wherein each of the materials have a different value for n, and wherein R is selected from the group consisting of hydrogen, alkyl groups having from 1 to 18 carbon atoms and aryl groups having from 6 to 12 carbon atoms;

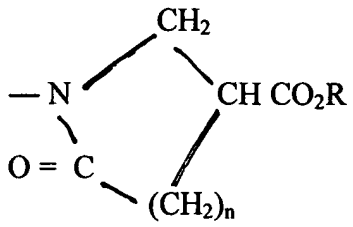
(III) reacting (I) and (II) for a time sufficient and at a temperature sufficient to provide a dendritic polymer having the general formula

$$D_G(Q)_{z-x}(Q')_x$$

wherein D_G is a dendritic polymer, $_G$ is the generation number of the dendritic polymer, x has a value of 1 to (z-1), z is an integer less than or equal to $N_c \cdot N_b^G$, wherein N_c is core multiplicity, N_b is branch cell multiplicity, Q has the general formula:



wherein n has a value of from zero to 3, Q' has the general formula:



wherein n has the value of 0 to 3 and wherein the value of n in Q'is different than the value of n in Q, and wherein R is selected from the group consisting of hydrogen, alkyl groups having from 1 to 18 carbon atoms and aryl groups having from 6 to 12 carbon atoms.

13. A dendritic polymer prepared by the process of claim 12.

14. A dendritic polymer as claimed in claim 13 wherein Q is

$$-N\text{-}CH_2 - CH(CO_2R) - CH_2 - C(=O)-$$ and Q' is

$$-N\text{-}CH_2 - CH(CO_2R) - (CH_2)_2 - C(=O)-.$$

15. A process as claimed in claim 8, wherein $D_G(Q)_{z-x}(Q')_x$ is $D_G(NH_2)\ Q)_{z-x}(Q')_x$.

16. A process as claimed in claim 8, wherein $D_G(Q)_{z-x}(Q')_x$ is $D_G(NHR")\ Q)_{z-x}(Q')_x$, wherein R" is either a hydrophobic group or a hydrophilic group and consists of 1 to 18 carbon atoms.

17. A process as claimed in claim 8, wherein $D_G(Q)_{z-x}(Q')_x$ is $D_G(N\text{-}(R)_2)_{z-x}(Q')_x$, wherein R is either a hydrophobic group or a hydrophilic group and consists of 1 to 18 carbon atoms.

18. A dendritic polymer as claimed in claim 5 wherein R" is –C-CC(OH)(R') wherein R' is selected from the group consisting of hydrogen and alkyl groups of 1 to 18 carbon atoms.

19. A dendritic polymer as claimed in claim 5 wherein R" is –C(=O)R and R is a long chain acid of up to 18 carbon atoms.